CLAIMS

1. Process for protectively coating an ejection chamber (35) of an ink jet printhead, to reduce damaging effects of aggressive inks, comprising the following steps:

step a): disposing of a die (20) comprising a silicon substrate (21) covered by a plurality of metallic and dielectric layers (23, 24, 25) in which is made an array of microcircuits for driving of thermal elements (22) for ejection of said ink, and also comprising a sacrificial metallic layer (26), provided with a cast (27) for at least one ejection nozzle (37), said sacrificial layer (26) and said cast (27) defining the inner shape of a chamber (35), of a feeding duct (36) connected to it and of said at least one nozzle (37);

step b): depositing on the outer surface of said sacrificial layer (26), through an electrochemical process, at least one metallic, protective coating layer (30);

step c): applying on said coating layer (30) a layer, the adhesion layer, (31) having a thickness preferably of about 1000 A°, to promote the adhesion of resins on said protective metals (30);

step d): depositing on said adhesion layer (31) a structural layer (32) of non-photosensitive epoxy or polyamide resin, having a thickness preferably between 20 and 60 μm, so as to completely cover said sacrificial layer (26), including the cast (27) of the nozzle (37);

step e): performing a polymerization of said structural layer (32) to increase its mechanical resistance to mechanical and thermal stresses;

step f): performing a planarization of the outer surface (33) of said structural layer (32), by way of a mechanical lapping and simultaneous CMP type chemical treatment (Chemical-Mechanical-Polishing), or other similar process, to uncover the upper cap (34) of

the cast (27) of copper;

step g): removing said sacrificial layer (26) and said cast (27) by means of a chemical etching, using a highly acid bath, formed for instance of a mix of HCl and HNO3 in a solution;

step h): depositing on the outer surface (33) of said structural layer (32), in a vacuum evaporation operation, a protective layer (39) of thickness preferably of approximately 1000 A°.

2. Process according to claim 1, wherein said metallic coating layer (30) is made of nickel-gold;

3. Process according to claim 1, wherein said metallic coating layer (30) is made of palladium-gold.

4. Process according to claim 1, wherein said metallic coating layer (30) is made of rutenium.

5. Process according to claim 1, wherein said protective layer (39) is made of a noble metal.

6. Process according to claim 5, wherein said protective layer (39) is made of chromium.

7. Process according to claim 8, wherein said protective layer (39) is made of magnesium fluoride and oxygen ($MgF_2 + O_2$).

8. Process according to claim 1, wherein said protective layer (39) is made of silica and chromium ($SiO_2 + Cr$).

9. Process of protectively coating against aggressive liquids hydraulic microcircuits (35, 36, 37) made in a resin (32), comprising the following steps:

step a): disposing of a die (20) comprising a silicon substrate (21) covered by a plurality of metallic and dielectric layers (23, 24, 25), and also comprising a sacrificial metallic layer (26) defining the inner shape of said hydraulic microcircuits (35, 36, 37);

step b): depositing on the outer surface of said sacrificial layer (26), in an electrochemical process, at least one metallic, protective coating layer (30);

step c): applying on said coating layer (30) a layer, the adhesion layer, (31) having a thickness preferably of approximately 1000 A°, to promote the adhesion of resins on said protective metals (30);

step d): depositing on said adhesion layer (31) a non-photosensitive epoxy or polyamide resin (32), having a predetermined thickness and completely covering said sacrificial layer (26);

step e): performing a polymerization of said resin (32) to increase its mechanical resistance to mechanical and thermal stresses;

step f): removing said sacrificial layer (26) via a chemical etching, by means of a highly acid bath, formed for instance of a mix of HCl and HNO3 in a solution.

10. Process according to claim 9, further comprising the following steps :

step g): performing, after step (e), a planarization of the outer surface (33) of said resin (32), through a mechanical lapping and simultaneous CMP type chemical treatment (Chemical-Mechanical-Polishing), or other similar process; and

step h): depositing, after step g), on the outer surface (33) of said resin (32), in a vacuum evaporation operation, a protective layer (39).